

## Select Teaching: authoring tool for building Learning Objects for language teachers' training and teaching support<sup>1</sup>

### *Select Teaching: ferramenta de autoria para construção de Objetos de Aprendizagem para formação e apoio didático de professores de línguas*

Larissa da Silva Medola<sup>2</sup>  
Celina de Oliveira Barbosa Gomes<sup>3</sup>  
Eduardo Alberto Felippsen<sup>4</sup>

#### Abstract

The use of technological instruments in educational environments and contexts was facilitated by the popularization of technology in general, which significantly supported the teaching-learning process. This fact highlights the importance of teachers' training to use these tools, as well as the presence of softwares and other appropriate tools for specific educational approaches. Thus, the present paper presents the creation of a didactic tool, the "Select Teaching", to be applied in the production of didactic material in the format of electronic handouts with foreign language content. The research is mainly characterized by the feasibility of considering these handouts as Learning Objects to be used by the language teachers of the Federal Institute of Paraná (IFPR) - Campus Assis Chateaubriand.

**Keywords:** Modern foreign language teaching. Digital didactic material. Learning Objects.

#### Resumo

*A utilização de instrumentos tecnológicos em ambientes e contextos educacionais foi oportunizada pela popularização da tecnologia em geral, que apoiou de forma significativa o processo de ensino-aprendizagem. Esse fato destaca a importância da formação docente para utilizar essas ferramentas, assim como da presença de softwares e de outros instrumentos adequados para abordagens educacionais específicas. Desse modo, o presente trabalho apresenta a criação de uma ferramenta didática, o "Select Teaching", a ser aplicada na produção de materiais didáticos em formato de apostilas eletrônicas com conteúdo de línguas estrangeiras. A pesquisa é caracterizada principalmente pela viabilidade de consideração dessas apostilas como Objetos de Aprendizagem a serem utilizadas pelos professores de línguas do Instituto Federal do Paraná (IFPR) - Campus Assis Chateaubriand.*

**Palavras-chave:** Ensino de línguas estrangeiras modernas. Material didático digital. Objetos de Aprendizagem.

1 Paper for the final project of the Technical Course in Informatics, advised by Celina de Oliveira Barbosa Gomes and co-advised by Eduardo Alberto Felippsen, presented on October 31<sup>st</sup>, 2018.

2 Undergraduate student in Chemical Engineering at the State University of Western Paraná (UNIOESTE), Toledo, PR, Brazil. Computer Technician at the Federal Institute of Paraná (IFPR), Assis Chateaubriand, PR. <https://orcid.org/0000-0002-5329-5960>. E-mail: [larissa.medolaiifpr@gmail.com](mailto:larissa.medolaiifpr@gmail.com)

3 Master's degree of Language Arts at the State University of Londrina (UEL), Londrina, PR. Professor in Basic, Technical and Technological Education at IFPR. <https://orcid.org/0000-0001-7102-2715>. E-mail: [celina.gomes@ifpr.edu.br](mailto:celina.gomes@ifpr.edu.br)

4 Master's degree of Education at UNIOESTE, Foz do Iguaçu, PR and specialist in Professional, Technical and Technological Education at IFPR. Professor of Technical and Technological Education at IFPR. <https://orcid.org/0000-0002-3102-0093>. E-mail: [eduardo.felippsen@ifpr.edu.br](mailto:eduardo.felippsen@ifpr.edu.br)

## 1 Introduction

The use of technological tools is necessary in educational environments in order to stimulate the teaching-learning process (TAJRA, 2012). The Center for the Study of Information and Community Technology (CETIC) (COMITÊ GESTOR DA INTERNET NO BRASIL, 2017) conducts a survey regarding the use of technology in education every year; in 2016, through ICT - Education 2016, a considerable increase in the use of technological tools was observed by the students and by the teacher. These tools are included in the teaching system mainly to solve demands detected in the educational environment. An example of this type of need is the difficulty in teaching and learning foreign languages, demonstrated by some teachers and students (PONTES; DAVEL, 2016). In this scenario, the teacher training for the use of these instruments is of extreme importance, as well as for the choice of software or adequate tools for the subject to be worked with.

The software "Select Teaching", subject of this present work, aims to expand the teaching environment of the teacher and provide a possibility of production and application of teaching material in their teaching practice. The software is targeted for teachers of modern foreign languages (English and Spanish) of the Federal Institute of Paraná (IFPR), Campus Assis Chateaubriand, and it was carried out as a Final Course Project (PFC) of the Vocational Technical High School - Informatics Program of IFPR, in the same campus.

Thus, a questionnaire was applied and tests were conducted with the language teachers of the Assis Chateaubriand Campus of IFPR to verify whether the tool meets the demands presented by the teachers, who demonstrated great acceptability and observed benefits when using the software.

For the development of this work, research was carried out in the areas of technologies associated with education; introduction and application of educational technological tools in Brazil and in the world; and teacher training for the use of information technology in their teaching process and for the use of the tools. In the light of the above, it is believed that "Select Teaching" will contribute to the reduction of the problems, helping both the teacher and the student in the teaching and learning of the English and Spanish languages.

## 2 Information technology applied to education: challenges in contemporary times

The use of technologies promotes countless changes in the educational scenario; this is

considered an achievement and a great innovation. However, making use of technological instruments as simple resources for content exposure, for example, may not cause the necessary transformations in the teaching process, so these instruments should actively participate in pedagogical practice. In such a context, ways to effectively use these tools in pedagogical spaces are discussed.

Over the years, society has changed its way of living, thinking and organizing itself, with the progress of Information and Communication Technologies (ICTs), characterizing the so-called Information Society (IS), as advocated by Coll and Monereo (2010). From this scenario of changes, a discussion on Educational Technology began especially with the use of computers.

In the late 1950s, the first materials and scenarios for self-learning were planned. It had the learning as a procedure of content reproduction and the purpose of autonomous production through effort and repetition. Near the end of the 1980s, attempts were made to develop Intelligent Tutoring Systems (ITS) or Intelligent Computer Aided Teaching Systems (IEAO). These systems sought to perform similarly to a human tutor. Thus, based on this method according to the particularities of the students, the system indicated the contents to be sequenced, in proper pace to each one of the students, as suggested by Wenger (1987 *apud* BARBERÀ; ROCHERA, 2010).

In 1990, however, scholars argued that such a system was not at all relevant, since it did not have enough flexibility for students. In an attempt to solve the adversities demonstrated by the intelligent tutorial systems, the development of Adaptive Hypermedia Systems (AHS) had its start, which made possible teaching, according to the individuality of the students. Having in mind that, in this situation, the contents would be related to what the student needs, taking into account their previous knowledge and the objective to be achieved.

In Brazil, the digital revolution had its first insertions since 1965, with the exposure and implementation of information technology in the country; which at this time it was very basic and difficult to access. In the mid-1960s, discussions began on making technological resources available for the educational process, an action that first took place at the Federal University of Rio de Janeiro (UFRJ), the Center for Electronic Computing and the Center for Educational Technology for Health, as well as at the Latin American Center for Educational Technology and the Federal University of Rio Grande do Sul (UFRGS) (COMITÊ GESTOR DA INTERNET NO BRASIL, 2016).

The use of Information and Communication Technologies in High School took place from 1975 onwards, through research that united the computational and linguistic areas. With the progress of these investigations, the Special Informatics Commission in Education was created, linked to the Special Informatics Secretariat (SEI) in 1983. In addition, there was the approval of the Brazilian Project of Informatics Education (Educom), which was also prepared by the Special Secretariat of Informatics (SEI), an organ created by the Decree n. 84.067, related to the National Security Council (COMITÊ GESTOR DA INTERNET NO BRASIL, 2016).

Despite the advances promoted by technology, however, it should be noted that it is the people (teachers and students) who are responsible for innovation in the teaching-learning process, not the tools themselves. Therefore, the proposal of approaches, such as the one presented in this work, effectively associates computer technology to teaching and learning (in several areas of knowledge and for different students). It becomes necessary.

This research addresses topics such as those related to Information Technology applied to the search, choice and organization of information related to teaching approaches; accessibility to repositories of Learning Objects; access to the database with suggestions for teaching and learning activities (COLL; MONEREO, 2010). Thus, ICT is considered as a mediator and facilitator of the relationship between the teacher and the teaching of certain content; students, for their parts, will be involved in this chain as "recipients" of what will be generated by the teacher. It is believed that this initiative collaborates in learning, considering that, according to Kenski (2012), teachers and students learn best through a cooperative method of interaction.

Therefore, it is essential to clarify, especially for the teachers, the proper application of information and communication technologies. This is so that the teaching tools and approaches that employ ICTs can promote the necessary interaction for a collaborative learning context.

## 2.1 Information technology as a demand in training and teaching practice

As seen above, the importance of teachers' instruction is verified, so that they can put into practice the use of approaches and tools in teaching. So, it is useful to make a brief description of the context on the training of these professionals.

The teaching-learning process goes through constant transformations, which demands teachers to

update their way of acting, shaping it to the students' reality. Teachers need know about the appropriate technological instruments for the construction of knowledge, taking into consideration the method applied and the subject to be studied; for this reason, it is necessary that the teachers undergo continuous training.

In this perspective, some attitudes of the teacher to present good results and permanent formation generally are: to elaborate their own didactic materials; to elaborate their own pedagogical project; to study and read systematically; and to deconstruct and reconstruct their practices (DEMO, 2011). Reflecting specifically on the training of teachers to use ICTs in their teaching process, one certifies the need for concepts and routines such as

[...] basic computer knowledge; pedagogical knowledge; integration of technology with pedagogical proposals; forms of classroom management with the new technological resources related to the available physical resources and the "new" student, who starts to incorporate and assume an active attitude in the process; revision of learning theories, didactics, multi, inter and transdisciplinary projects (TAJRA, 2012, p. 99).

Mauri and Onrubia (2010) establish other significant characteristics regarding to teacher training in the use of ICTs, which are: the ability to positively recognize the use of ICTs in education and teach their use at the instrumental level; the ability and knowledge to use the technological apparatuses in usual settings; the understanding of the positive and negative consequences of the use of ICTs in people's lives; and the understanding of issues, related to inequalities in access to technological means.

When planning the development of new materials and methodologies, based on ICTs by the teachers themselves, it becomes clear that there is the possibility of using various resources and instruments for the construction of the elements. With this in mind, the software developed by the author of this work is mentioned, a tool that advises the teaching staff in the area of languages, particularly in the production of theoretical materials and exercises, more specifically Learning Objects (LOs) (WILEY, 2013). Regarding their use, Mauri and Onrubia (2010) state that

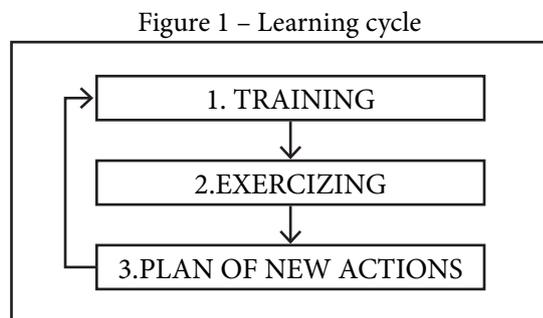
The recent interest in treating content proposals as reusable learning objects responds to the logic of trying to organize, preserve and distribute content so that it can be used within the framework of different educational proposals. (MAURI; ONRUBIA, 2010, p. 121).

Nevertheless, it is pertinent to emphasize that the relevance and efficiency of this type of approach

depend on the application scenario, which needs to present the definition of the objective to be achieved (REPARAZ, 2000 *apud* MAURI; ONRUBIA, 2010).

Tajra (2012) presents the learning cycle relating to information technology and education, which portrays three stages: training, exercise and planning of new actions. In the qualification, the teachers prepare themselves to get to know each other and learn how to make use of information technology in the educational process; in the exercise, teachers start the activities, using the technological tools in their teaching process, practicing what they have learned; and in the planning of new actions, after experiencing the use of technology in their classes, teachers can adapt their lesson planning with computerized equipment, indicating improvements to the teaching-learning process, in which they are inserted.

After the final stage, one has its return to the initial stage, since the end of the cycle demonstrates that the method was properly learned and installed in the teaching-learning process. Thus, it must be started again, taking into account the particular dynamism of technology and information production, considering other tools and approaches that use them. By knowing the purpose and dynamics of the cycle, it is possible to represent it in the way shown in figure 1.



Source: Adapted from TAJRA (2012).

In this respect, it is certified that the teacher is an extremely important element in the environment of use of technological instruments in education. This professional helps and guides the students, with the intention of making them, through the use of ICTs, in order to develop knowledge, ensuring that the innovation process is productive.

## 2.2 Learning Objects: concepts and uses in the relationship between technology and teaching

The possibility of applying Information and Communication Technologies (ICTs) and the media in education has aroused teachers' curiosity, since these tools are shaped as didactic resources that

allow teachers to adapt to their different teaching contexts. This pedagogical and didactic equipment has the properties of and is converted into Learning Objects (LOs).

As far as the definition of the concept is concerned, some disparities are identified. Koohang and Harman (2007) consider LOs as any material, by which the student can obtain information and, through them, build their own knowledge. Tarouco; Fabre and Tamusiunas (2003) point out as Learning Objects only digital resources used for teaching. However, one can consider as Learning Objects, in an overview, learning and instruction instruments used for the purpose of teaching and reviewing concepts. These instruments have as properties: the flexibility, the possibility of reusing content and its updating (AGUIAR; FLÔRES, 2014). The LOs can range from slide presentations and animations to simulators, thus highlighting the wide range of these materials, and can also be composed of the junction of materials and media, provided that the elements have a thematic and pedagogical affinity.

It is important to note that LOs are produced, so that they can be reused in other contexts as well. In this sense, Tarouco, Fabre e Tamusiunas state that

A Learning Object is any resource, additional to the learning process, that can be reused to support learning, a term generally applied to educational materials designed and constructed in small sets to enhance the learning process where the resource can be used. (TAROUCO; FABRE; TAMUSIUNAS, 2003).

Singh (2001 as cited in AGUIAR; FLÔRES, 2014) determines that LOs must have: Objectives, Instructional Content and Practice and Feedback. Learning Objects are also composed by other smaller fragments, such as: adaptability; granularity; accessibility; durability; interoperability; and metadata. (AGUIAR; FLORES, 2014).

The LOs "can be used both in face-to-face and distance classes; individually, in groups or in parts, composing a pedagogical architecture" (WILEY, 2002 *apud* BULEGON; MUSSOI, 2014, p. 66). This reveals that the application of this material is dynamic in the different teaching spaces and contexts, accentuating the potential of the approach. Thus, Tavares (2007) quoted by Lima, Falkembach and Tarouco (2014) states that the use of LOs in face-to-face conditions can be a good pedagogical resource, being able to facilitate the teaching and learning of a subject and, therefore, the construction of knowledge by the students. To illustrate, the combination of audiovisual and theoretical materials (written) is highlighted, for

example, with the aim of attracting the student; this approach is treated in the tool analyzed in this work.

### 3 Select Teaching: Learning Object generation tool for training and support of language teachers

In this section, we will analyze the problem in the scenario of the Federal Institute of Paraná, Campus Assis Chateaubriand, the objectives to be achieved with the tool, the materials used for its production, the methodological process applied for the development of the tool and the software "Select Teaching".

#### 3.1 Recognizing the demand

In the modern foreign language teaching scenario, the complexity and/or lack of affinity of students with the study of these areas is observed. This situation can occur due to the lack of motivation, as Vendramini (2006) points out, for learning or even the superficial dealing of the content, little associated to the reality and demand of the students. Thus, the student ends up not really knowing the language/subject in a deeper way and, therefore, does not show willingness.

Additionally, we should consider the problem of the limited time used to teach these languages. As much in institutions, such as the one of this project - Federal Institute of Paraná (IFPR), Campus Assis Chateaubriand, which has a syllabus toward a technician High School, as in educational establishments, where the syllabus is related more to the common core, a low amount of hours are offered for the study of foreign languages (English and Spanish). This results the teachers may not be able to thoroughly focus on the contents in their teaching process, as well as prepare and experience with other didactic methods, that can be more attractive to the students.

#### 3.2 Tool objectives

Based on the context specified, our aim was to offer the teachers, through the software, a proposal for the extension of their teaching environment - considering that the teaching scenario transcends the classroom, being characterized as any place, where the student wishes to use the digital didactic material - being this stimulus for interaction on behalf of the student. Thus, it was sought to make the learning of modern foreign languages an autonomous and effective activity for the student, allowing the students to access the LOs produced and enabled by the teachers; then, with the help of teachers, students can develop their knowledge. The digital material will be formed by several elements, as previously mentioned, such as

video resources, images and PDF files, besides the textual content, which will provide more interaction and, consequently, more interest of the student for the work contents. This assertion is plausible in cases like the one studied by Vendramini (2006) in a research carried out in a public school in a city of northern Paraná with a class of eighth grade students, which presented about thirty (30) students in 2006: the research attested that students showed more motivation in the teaching process through the use of different media, particularly videos and music.

#### 3.3 Technologies used

In the development of the project, programming and markup languages were mainly used as well as a database. Considering the fact that the software in question was developed as part of a computer course, the description of the tools used is believed to be relevant:

##### 3.3.1 Java

Java is a programming language that adopts the Object-Oriented code analysis model, which treats the elements incorporated into the software as objects. It was created by Sun Microsystems (PET- Informatics Group). In accordance with the concepts expressed by Carvalho (2016), this programming mode was developed in an attempt to bring programming closer to reality; one can thus assign properties and actions to these objects.

The Java language was designed to be compact, simple and compatible with all operating systems and platforms. It is characterized by the fact that the code is written inside a class. Furthermore, in Java, all elements are objects - excluding primitive types of variables (character, real and ordinal numbers, as well as Boolean values) (CARVALHO, 2016).

##### 3.3.2 HTML5

HTML, which comes from the English expression "HyperText Markup Language", indicates a language that uses "tags" to declare the beginning and the end of a certain function within the content, and thus display this content with the desired organization. This language is the base in the construction of web pages, being mainly in charge of the structuring of each type of element in the pages. HTML5, precisely, is the new version of the language (PEDROSO, 2007).

##### 3.3.3 CSS3

CSS comes from the English "Cascading Style Sheets" and designates a style language applied to the

way the content is presented on the page, in other words, it modifies the stylization of the HTML tags. It can be claimed that the CSS is used to develop styles that explain the layout of the HTML. CSS3 is a more recent version of CSS and its novelties make reference to visual effects, specifically (FERNANDES, 2015).

### 3.3.4 Db4o database

Database is used for the purpose of "persisting data necessary for the maintenance of the business to which the data are applied, enabling the recovery, comparison and treatment of these data, in order to produce tangible results" (BOSCARIOLI *et al.*, 2006, p. 2). In this context, there is the Object-Oriented Database (BDOO) model, in which the data are stored as Objects - each object is registered with all its information in a respective way, related to it. An example of this Database model is Database for Objects (Db4o) (BOSCARIOLI *et al.*, 2006).

Object-Oriented Databases are characterized by inheritance, polymorphism and encapsulation, three (3) of the four (4) pillars of the object-oriented programming paradigm (BOSCARIOLI *et al.*, 2006). It

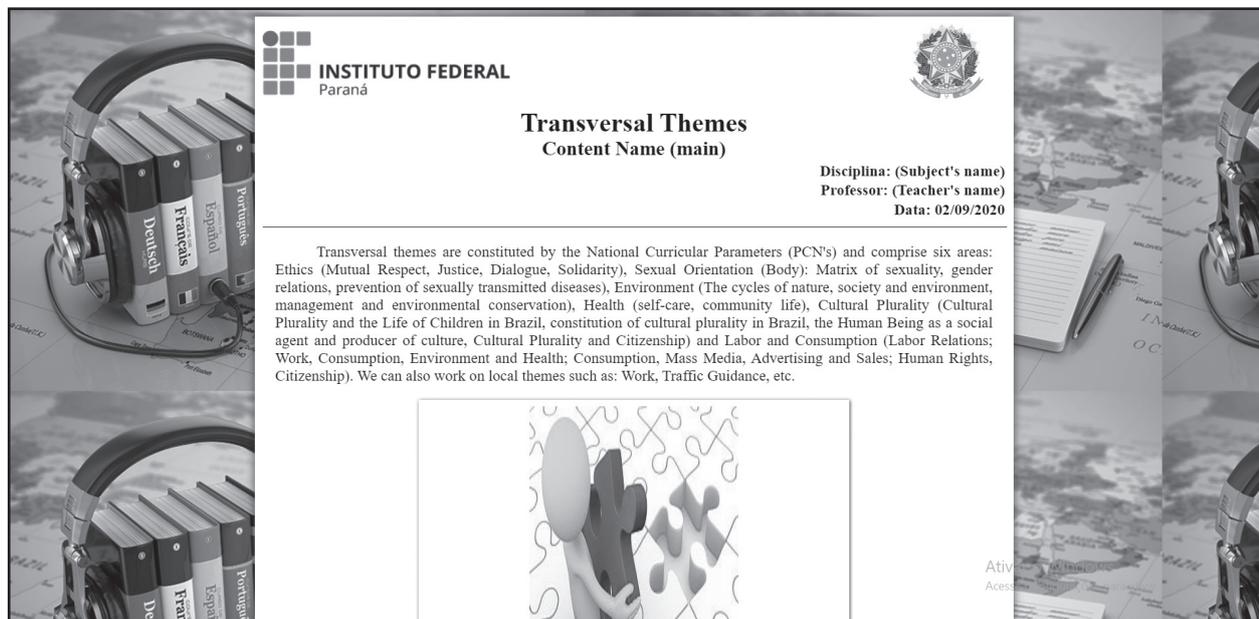
can be used in order to manifest greater flexibility in data handling, since the programming paradigm is the same as for data durability, disregarding the mapping layer of the relational object, when using the relational paradigm for information persistence together with the object oriented paradigm to model the application (BOSCARIOLI *et al.*, 2006).

Moreover, about the characteristic of this work, Db4o does not require installation to work, because it is embedded within the software developed, facilitating the use of the tool intended for users who have no knowledge to install and manage database.

### 3.4 Development methodology

At first, we studied HTML5 and CSS3 technologies, through video classes, reviewing concepts seen throughout the course and through their exercise. This fact made the development of a web page possible, illustrated by picture 2, as a model for the digital didactic materials - precisely, a LOs model - that will be generated, when the tools are established. In this way, we could use these properties, when creating the software materials in the form of web pages.

Figure 2 - Learning Objects model



Source: The authors (2020).

From the analysis of figure 2, it is possible to observe the characteristics of the LOs, finding elements such as the header, which has a logo of the institution, in which the software will be used, in this case, the Federal Institute of Paraná; the subject to which the material, presented is attributed; the teacher who

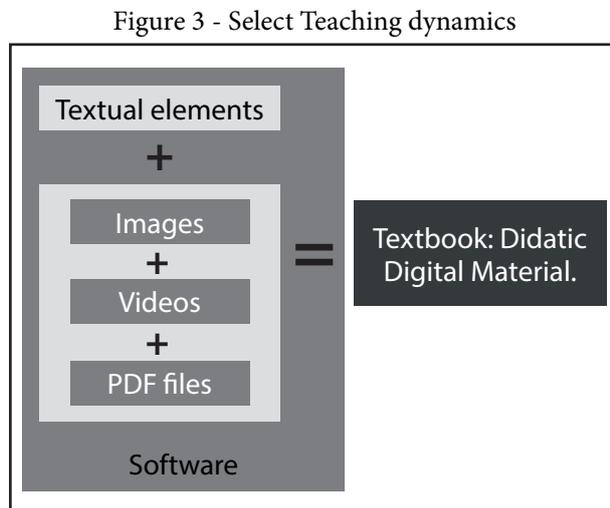
teaches it; and also the title and subject of the digital didactic material. There was also the definition of the media that could be added - images, videos and PDF files. Besides, the font of the text and its size, the image used as background, among other details, related to the layout of the LOs have been set up.

The functions and characteristics that the software will present were analyzed and thus the screens were developed, taking into account this structure. The software has specific fields for teachers to inform essential data for the materials they wish to generate; being them: the theme, the textual material, the address of each media and their respective subtitles (images, videos and PDFs, each in a separate place).

In the development of the software, Java programming language was used, from the Netbeans IDE 8.2 platform together with the HTML5 and CSS3 languages; therefore, the class responsible for generating the Learning Objects was elaborated. It has the string concatenation portion, that is, the fragment in charge of joining the components added by the teacher in the software with the structure and style settings of HTML5 and CSS3, so that the digital materials might be produced, according to the organization of the contents of the model in web pages.

### 3.5 Select Teaching software

The tool that is named "Select Teaching" is a desktop software for foreign language teachers of the Federal Institute of Paraná (IFPR), Assis Chateaubriand Campus. This software is a mechanism dedicated to the creation of LOs, as digital didactic materials in web pages, produced from elements added by the teachers themselves: performance illustrated by figure 3.

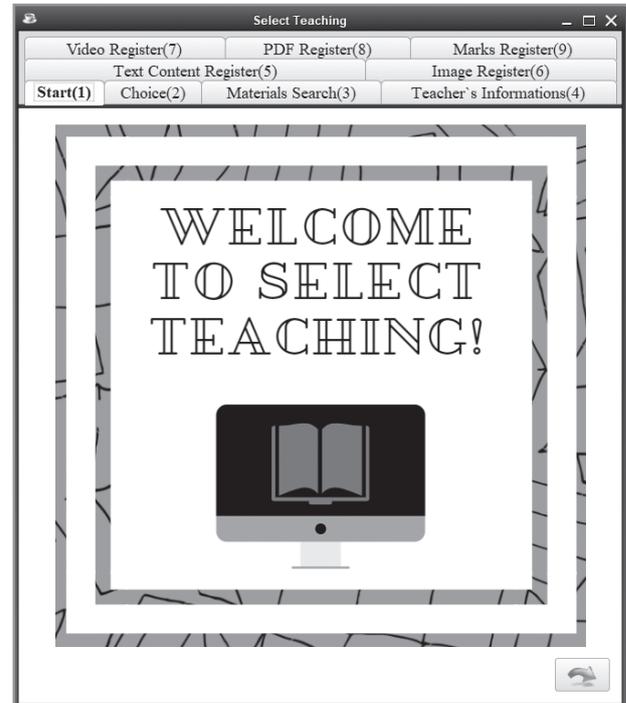


Source: The authors (2020).

In the system, in advance, the teachers will select the materials that they wish to incorporate into LOs. The type of component can be from textual elements to media - images, videos and PDF files. The software will present a specific panel for the insertion of each type of material.

The visual elements of the software have been arranged for its main screen. This screen has panels that divide the data, according to their aspects, as well as separating the functions, with instructive nomenclatures, as shown in figure 4.

Figure 4 – First page of Select Teaching



Source: The authors (2020).

The figure above shows the initial page of Select Teaching, whose featured element is an image produced by the author with a greeting to the users of the system (teachers) and a symbol to represent a workbook / teaching material on a computer monitor; this represents the digital educational materials that will be created by the teacher, considering that they will be stored in digital environments.

In figure 4, there is also a button with an arrow, which is also displayed on most of the other panels of the software; it portrays the progression in the system, that is, the connection of one step of the procedure of adding the data to another. In this way, the teacher will be able to perform all the procedures up to the creation of the material.

The next screen contains two buttons with the purpose of making the teachers select the type of material they want to work with, being it a new digital didactic material or a material already created, making editing possible. Depending on the option the teacher chooses, the panel displayed will be different. If the teacher intends to edit an existing material, the material search page will be displayed; in other case, the

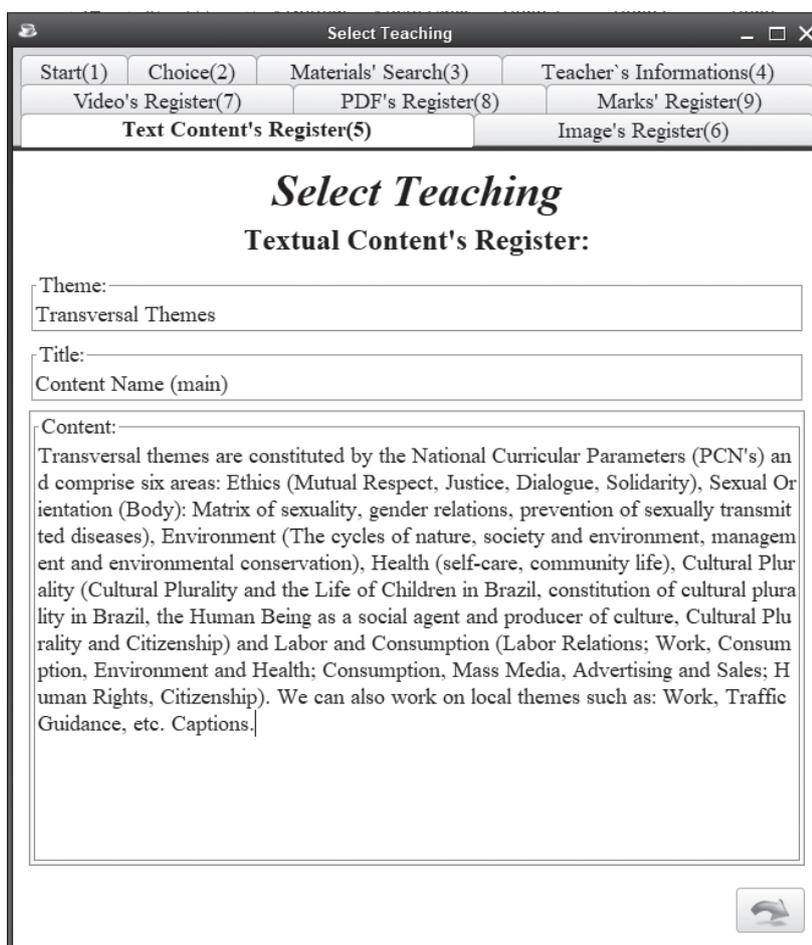
registration screen of a new material will be shown.

If the teachers decide to work with new material, they will be directed specifically to the page that contains their personal information, which will be displayed in the header of the LOs. Otherwise, they will be directed to the search page of didactic materials already created, allowing the editing of some element of the "material". The person, who uses this panel, will search for the material, based on the LOs' title, and the material(s) with related titles will be shown in a list on this screen. So, the teachers will choose the LO that they wish to change and, when they press the button, they will

go to the next page of the software, which will present the information of the teachers such as: name and subjects, as well as the date of creation of the LOs. This information will be used in the headers of the digital learning materials.

When the "proceed" button is pressed, the panel will be displayed as in figure 5. It will present the previously registered components, which are enabled to edition for any type of elements. This page will contain fields to add more textual content, such as the "theme" and the "title" of the Educational Object, which will be presented in the header of the LOs, in addition to the theoretical "content".

Figure 5 - Textual elements inserting panel



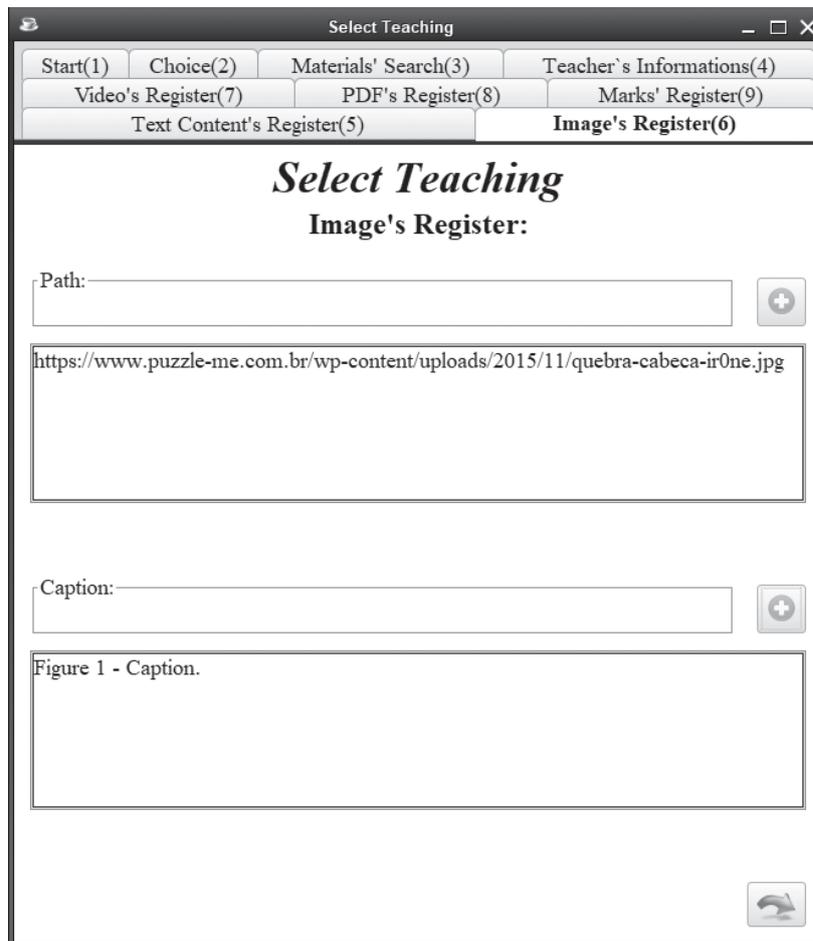
Source: The authors (2020).

The next panels of this screen portray the inclusion of the media - precisely, it here refers to the images, videos and files in PDF format - and their respective subtitles. The addition of images is described in figure 6.

The dynamics of this section happen when users insert image URLs (Uniform Resource Locator) in

the "Image Address" field. After that, they must click on the button that shows an addition sign, so the address will be forwarded to the list located below this field. This list embraces all the picture addresses that go through the process described above. The same behavior applies for the subtitle areas.

Figure 6 - Image inserting panel



Source: The authors (2020).

The video and PDF upload page has properties similar to those of figure 6, in relation to the layout of the elements in the panel, the only feature that is distinctive is the type of media. The last panel of screen progression is the insertion of media tagging markup, allowing the definition of media positions among the textual components. For this to occur, since there are three different types of media, a markup has been assigned to each of them, being: "<img>" for image, "<vid>" for video and "<pdf>" for PDF files.

The figure 7 shows the page for adding media to digital teaching materials. This panel will be loaded with the previously inserted text, and it is compatible with the media tagging users might want to add. The media will be added to the LOs, according to the order of insertion in the segments of media inclusion, in the positions explained by the teachers.

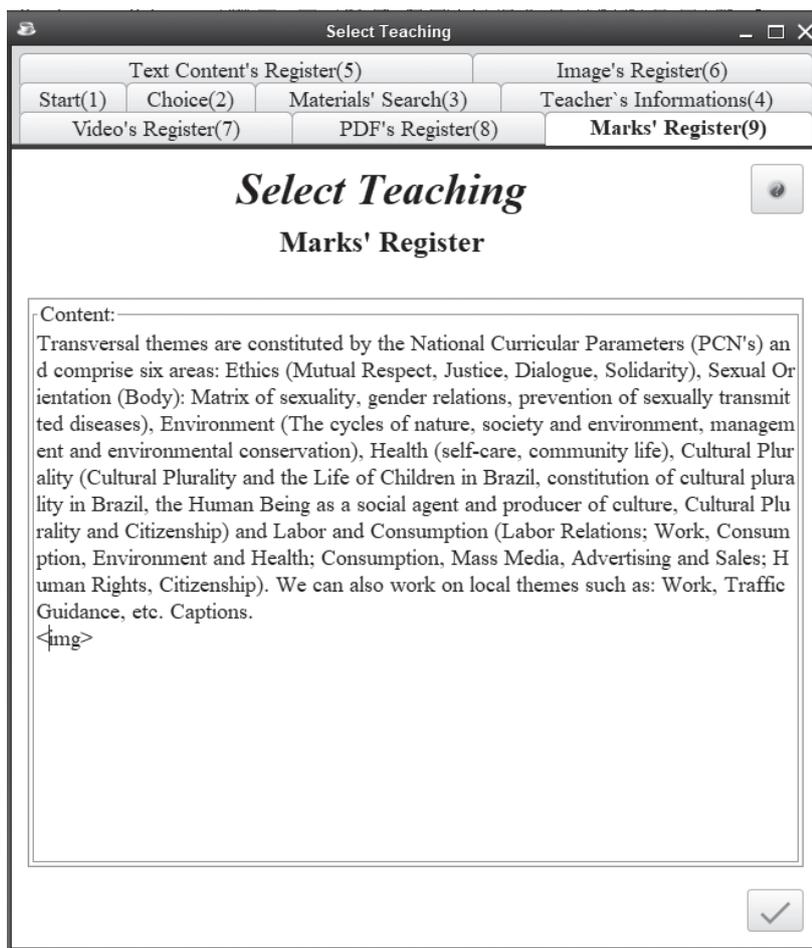
Another item present in this panel is the help button, which will help the system user at tagging,

by opening a second screen that will have a GIF, describing the procedure. The button at the bottom of the page has the function of creating the Educational Objects. When it is pressed, the teachers must define the directory, where they intend to save it. These instructions for the use of the software are demonstrated in videos produced by the author of the work, which are available on Youtube and can be accessed through the following link: [https://www.youtube.com/watch?v=HnCrEGEX4nM&list=PLgt2v-jX-mq-yD1I\\_q-Veiq7jHPs6tw-EN](https://www.youtube.com/watch?v=HnCrEGEX4nM&list=PLgt2v-jX-mq-yD1I_q-Veiq7jHPs6tw-EN).

#### 4 Results

As explained in the previous section, Select Teaching software presents itself as the main result of this work: a desktop system. This software is a tool that provides the creation of Learning Objects, in the format of digital didactic materials - in web pages.

Figure 7 – Markup adding panel



Source: The authors (2020).

This software is aimed at language teachers - mainly foreign language teachers - of the Federal Institute of Paraná (IFPR), Campus Assis Chateaubriand. Through Select Teaching, as exposed, teachers will be able to produce digital didactic materials, with textual elements and also media - images, videos and PDF files - selected according to the perspective of the teacher's approach and the adequacy of the components to the subject, being such materials arranged on the page in the way the teacher stipulates. The media will be provided with subtitles. The LOs produced by the teachers will be in accordance with the standard model defined by the author of this article together with teachers, who will use the system.

In addition to the desktop system, the article entitled "Select Teaching: authoring tool for building LOs applicable to the training and didactic support of language teachers" is also a result of a project established in early 2018. In this project, the history of the insertion of technological tools in the education

scenario and in schools around the world, and specifically in Brazil, were briefly discussed, showing how the introduction and evolution of this process took place, in order to reach what exists today.

In the study, the demand for teacher training in the use of technological instruments in the teaching process was also discussed, with the objective that this job be done, in such a way as to obtain effective learning in return. Thus, it is taken into account that it is necessary to observe the context, in which such technological elements will be inserted, as well as to define the results one wishes to achieve, in order to establish the best tool and the most pertinent way to apply it to teaching.

The paper also addressed the design of LOs. The conclusions among some authors differ, being evidenced by some that any materials, on which knowledge can be built from, it is considered a Learning Object, as Koochang and Harman (2007) point out; whereas, for some, as Tarouco, Fabre and Tamusiunas

(2003), LOs refer especially to digital materials focused on the production of knowledge.

For the approval of the system and the application of the concept of LOs, the presentation of Select Teaching to teachers was promoted, showing how the software could be used, through a meeting held with each of the four (4) language teachers of the Federal

Institute of Paraná - Campus Assis Chateaubriand. At the time of the meeting, a questionnaire was given orally, which presented the questions in chart 1. The questionnaire had five (5) questions that addressed the use of information technology in the teaching process of each teacher, the necessary/received teaching training for that and the knowledge of the concept of LOs.

Table 1 - Questions presented in the questionnaire

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**Questionnaire for language teachers of the Federal Institute of Paraná - Campus Assis Chateaubriand.**

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1. How do you consider the issue of implementing information technology in education?
  2. Do you use technology in your classes? How often do you use it? And in what way?
  3. Have you had any kind of training on the use of technology in teaching (either in undergraduate or in specific pedagogical courses)?
  4. In your opinion, how can information technology be employed in language teaching?
  5. Do you know the so-called Learning Objects? If so, describe them.
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Source: The authors (2020).

Analyzing the answers of the teachers, regarding the first question, it was identified that, in general, the teachers show themselves in a positive way towards the use of information and communication technologies in education, treating them as another way to practice teaching. Some barriers were also raised that end up interfering negatively in the new teaching scenario, such as the lack of resources in classrooms and schools and limitations to the Internet.

According to the second question raised, all teachers answered that they used some kind of technology in their classes, predominantly slides, video/audio-visual materials and even music, however, they did not use other kinds of technological tools, such as educational software.

Question number 3, linked to teacher training to deal with ICTs in classrooms, obtained as a predominant answer that teachers had not gone through any kind of training at graduation - this fact can be attributed to the year of the training, but, later and recently, they carried out and/or carry out continuous training in events, congresses and also online courses.

The opinions demonstrated by the teachers, regarding the application of information technology in language teaching specifically, according to question 4, show that the technologies can act in a way that helps in the teaching-learning process, providing an opportunity for a "digital exchange", a term used by one of the teachers interviewed, in which the students come into contact with the culture and other specificities of other countries, including the language. The use of information and communication technologies for the teaching of (foreign) languages in the model of music and videos, websites and as a possibility of

tools with a certain interactivity were also mentioned.

In the last question, referring to the knowledge about the LOs, all the teachers stated that they did not present previous knowledge about the term "Learning Object", but by its very name they sensed that it was a material that makes learning possible, despite its definition. After the five (5) questions, the software was presented to the teachers: how to manage it and the resulting material, respectively. The teachers demonstrated great acceptability and relevance for future use, and expressed that "Select Teaching" will be a tool that will help in their teaching processes.

It was noted that some points raised by teachers were being employed in the project, such as the possibility of using music and videos. Furthermore, the software is offline, i.e. it does not require a direct connection to the Internet, overcoming the limitation also mentioned.

Moreover, the computer program registration request was made in the IFPR campus of Assis Chateaubriand, through the filling out of the necessary documents, where it has already been analyzed by the Center of Technological Innovation (NIT) and properly sent to the Rector's Office, passing through the IFPR Innovation Agency (AGIF), which has also demonstrated its contributions and approval. Finally, the register was sent to the National Institute of Industrial Property (INPI) and the registration of the Select Teaching is awaited.

## 5 Conclusion

It is well known that teaching languages, especially foreign languages, is a challenge. This is due to

several factors such as the restriction of time allocated to language classes, the lack of affinity and the difficulty expressed by students. Thus, strategies have been developed, in order to improve the teaching-learning process and make it more dynamic and unique.

The "Select Teaching" tool is one of those strategies that seeks to provide an alternative way of teaching and learning languages, in which the digital didactic material produced by the teacher will be made available to students. The students, in turn, will have the possibility to access the Learning Objects and build their own knowledge at any time and place they wish.

Thus, it is believed that the software will provide a change in the context of the IFPR, Assis Chateaubriand campus, solving a demand verified in the current scenario of the process of teaching and learning modern foreign languages mainly, achieving the proposed objectives. In addition, the project has provided a broad academic growth of the author, as a researcher, based on research and practical and mainly theoretical production. The work proved relevant not only because it met the initial proposal, according to the teachers' analysis, but also because of the positive opinions and evaluations.

The possibility of Select Teaching improvements is also highlighted, especially regarding to the look and dynamics of this desktop software. Considering the limitations of NetBeans in relation to visual resources, the transposition of the entire system to the web platform is suggested, which presents vast diversity and alternatives to produce more customized visuals.

The HTML5 and CSS3 languages, used in the production of the LOs, have met the proposed setting for digital didactic material to be created. However, these languages do not allow great interaction of the system with the user (student), for example, in the matter of solving exercises directly through the page. Thus, we analyze the possibility of implementing the PHP programming language - Hypertext Preprocessor, originally "Personal Home Page" - which will provide interactivity to LOs' pages produced, enabling the "information exchange" between the student and the digital didactic material.

Ultimately, the extension potential of the work theme was verified, since the adaptation and implementation of the software, as well as its main product (digital didactic material), can be extended to other areas and generate LOs in them, according to the need/objective of the teacher, allowing also the continuity and the use of this research in projects at undergraduate level. Moreover, the accomplishment of the work provided the opportunity to verify the

development of the author's knowledge, selection and implementation of the tools used to solve a real world demand; this, in order to favor, in some way, not only the teaching institution (and language teachers), in which the project was developed, but others, eventually, for which the software can be made available.

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